

# DURHAM



1 8 6 9  
CITY OF MEDICINE

## **Thermoplastic White & Yellow Paint**

**Bid No. 4-149-12**

**City of Durham  
Finance Department  
Purchasing Division**



**CITY OF DURHAM**

*Finance Department*

101 CITY HALL PLAZA, ANNEX BLDG. | DURHAM, NC 27701

919.560.4132 | F 919.560.4325

[www.durhamnc.gov](http://www.durhamnc.gov)

**May 5, 2012**

**Bid No. 4-149-12**

**Proposals will be received in the City of Durham, Finance Department, Purchasing Division, until 4:30 p.m., May 9<sup>th</sup>, 2011 for furnishing the following items listed below.**

**Bids can be hand delivered or mailed to 101 City Hall Plaza (Annex), Durham, North Carolina 27701, or faxed to: 919-560-4325.**

**The undersigned firm offers to supply the following to the City:**

<b>Item No.</b>	<b>Quantity</b>	<b>Description</b>	<b>Unit Price</b>	<b>Extension</b>
	44,000 lbs.	WHITE Thermoplastic Paint	\$_____/lb	\$_____
	88,000 lbs.	YELLOW Thermoplastic Paint	\$_____/lb	\$_____

**SEE ATTACHED SPECIFICATIONS (IF ANY), WORKFORCE STATISTICS  
FORM, GENERAL CONDITIONS & EEO PROVISIONS**

**PLEASE SIGN AND INCLUDE DELIVERY AND TERMS**

**If the City of Durham issues to the bidder a Purchase Order that refers to the Bid Number shown on this bid, the bidder shall provide the quantities of goods required by the City during the period shown in the "Delivery" box on the Purchase Order (which period begins on the Order Date shown on the Purchase Order) unless that period is changed as provided in the bid documents. The bidder will not be obligated to fulfill a Purchase Order for a quantity that is not in accordance with the quantity limitations, if any, in the bid documents. The bid documents include all conditions, specifications, and terms on file in the City's Purchasing Division under that bid number.**

This the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_  
(Date) (Month) (Year)

\_\_\_\_\_  
OFFICIAL LEGAL NAME OF BIDDER

\_\_\_\_\_  
ADDRESS

\_\_\_\_\_  
CITY STATE ZIP CODE

\_\_\_\_\_  
AUTHORIZED SIGNATURE

\_\_\_\_\_  
PRINT NAME TITLE

(\_\_\_\_) (\_\_\_\_)  
TELEPHONE NUMBER FAX NUMBER

\_\_\_\_\_  
FEDERAL I.D. NUMBER

\_\_\_\_\_  
EMAIL ADDRESS /COMPANY WEBSITE

CITY OF DURHAM PRIVILEGE LICENSE NUMBER \_\_\_\_\_

DELIVERY SHALL BE MADE WITHIN \_\_\_\_\_ DAYS AFTER RECEIPT OF  
PURCHASE ORDER.

PAYMENT TERMS: \_\_\_\_\_ METHOD OF SHIPMENT: \_\_\_\_\_

F.O.B.: DESTINATION ONLY

# **SPECIFICATIONS**

## **THERMOPLASTIC PAVEMENT MARKING MATERIALS**

### **I. GENERAL**

This specification covers machine applied hot Alkyd/Maelic Thermoplastic Pavment Marking Material with both incorporated (pre-mixed) glass beads and drop-on glass beads. The thermoplastic material for hot Alkyd/Maelic applications shall consist of homogeneously composed pigments, fillers, resins, and glass reflecting spheres. It is the intent of these specifications to describe the general and specific requirements for reflective pavement marking thermoplastic (a spray/ribbon extrude mix), to be used by the City of Durham, North Carolina in its pavement marking program. Bidder shall conform to material specifications and qualifications in Section 1205 of the current edition of the N.C. Department of Transportation Standard Specifications for Roads and Structures.

### **II. SAMPLING AND TESTING**

The methods of sampling and testing all materials and products covered by this contract shall be in accordance with the latest standards of the American Society for Testing Materials, the federal government, or of other recognized standardizing agencies as indicated for each material.

Materials used in this contract may be sampled and tested by the City of Durham using the indicated standards and methods to determine conformance with specification requirements. An adequate size sample of material shall be extracted at random from each production batch.

The City of Durham reserves the right to inspect and accept the material either at the destination or at the point of manufacture. In either case, the manufacturer shall furnish whatever samples and formulas are required to ascertain that the finished material complies with specifications. Any material not meeting the specifications shall be replaced with satisfactory material, at no additional cost to the City of Durham, and all handling and transportation charges for such replacement shall be paid by the manufacturer.

### **III. CERTIFICATION REQUIRED**

- A. Certificate of Compliance. The manufacturer shall submit for each batch a Certificate of Compliance on the form provided by the City of Durham (Form TPCC-1.1), certifying that the material meets all of the requirements in this specification.
- B. Statement of Characteristics. The manufacturer shall submit with each batch a Statement of Characteristics on the forms provided by the City of Durham (Form TPSC-1.1 and Form GBSC-1.1), giving all of the information requested, except that which is proprietary. This statement shall be for confidential use of the City of Durham, and the information therein will not be revealed by the City of Durham, but will serve and assist in identifying and testing materials furnished.

### **IV. THERMOPLASTIC MARKING MATERIAL**

#### **A. Type of Material**

This specification covers thermoplastic pavement marking materials suitable for use as reflective pavement marking on bituminous pavement, as well as concrete pavements. The materials shall

# **SPECIFICATIONS**

## **THERMOPLASTIC PAVEMENT MARKING MATERIALS**

be manufactured for application by ribbon extrusion method onto the pavement in molten form, with glass beads mixed in and also dropped into the material immediately after it is applied.

### **B. General Characteristics**

The compound shall resist deterioration by contact with sodium chloride, calcium chloride or other chemicals used to prevent ice on roadways, or because of the oil content of the pavement materials from oil droppings or other effects of traffic. In the plastic state, materials shall be free from fumes which are toxic or otherwise injurious to persons or property. The material shall withstand deterioration if held at the plastic temperature for a period of four hours, or by reason of three reheatings to the plastic temperature. The temperature versus viscosity characteristics of the plastic material shall remain constant up through three reheatings, and shall be the same from batch to batch. The color shall be stable for at least three reheatings and between batches. To insure the best possible adhesion, the compound, as specified, shall be installed in a molten state at the temperature recommended by the manufacturer, and the material shall retain its color for a minimum of four hours.

### **C. Foreign Matter**

The binder shall consist of a homogeneous mixture of pigment, filler, resins and reflectorizing glass spheres. The resins shall Alkyd/Maleic based, which shall be made up of a mixture of synthetic resins at the discretion of the manufacturer, however, at least one synthetic resin shall be solid at room temperature and at high boiling point plasticizers. At least one – third of the binder composition shall be 100% solid maleic-modified glyceryl ester resin and shall be no less than 10% by weight of the entire material formulation. The binder shall contain no petroleum based hydrocarbon resins. The pigmented binder shall be well dispersed and free from all skins, dirt, foreign objects or such ingredients as will cause bleeding, staining or discoloration. The filler shall be a white calcium carbonate silica or equivalent, with a compressive strength of 5,000 psi (34.5 MPa).

# SPECIFICATIONS

## THERMOPLASTIC PAVEMENT MARKING MATERIALS

### D. Composition:

Binder	18.0% min.
Glass Beads	30.0% min.
Calcium Carbonate & Inert fillers	50.0% max.
Titanium Dioxide (White only)	10%
Yellow pigment	See note

Note: The amount of yellow pigment, calcium carbonate, and inert fillers shall be at the discretion of the manufacturer, providing all other requirements of the specification are met.

### E. Suitability for Application

The thermoplastic material shall be a product especially compounded for traffic markings. The markings shall remain intact under normal traffic conditions at temperatures below 140°F (60°C). The markings shall have a uniform cross section. Pigment shall be evenly dispersed throughout the material. The density and character of the material shall be uniform throughout its thickness. The exposed surface shall be free from tack and shall not be slippery when wet. The material shall not lift from the pavement in freezing weather. Cold ductility of the material shall be such as to permit normal movement with the road surface without chipping or cracking.

### F. Drying Time

The drying time shall follow a characteristic straight line function, the lower limits of which are 2 minutes maximum at 50°F (10°C), the upper limits of which are 10 minutes at 90°F (32°C), both temperatures measured as surface temperatures. After application and proper drying time, the material shall show no appreciable deformation or discoloration under local traffic conditions in air and/or road temperatures ranging from -20° to 120°F (-30°C to 50°C).

### G. Physical Characteristics

1. Color. The thermoplastic material, after heating for four hours at 425°F (218°C) under agitation, shall meet the following color requirements:

Yellow	Daylight reflectance at 45° -0 = 45% min.
White	Daylight reflectance at 45° -0 = 75% min.

The color shall reasonably match Federal Test Standard Number 595, Chip Number 13538.

2. Softening Point. Materials shall have a softening point of 215° ± 15° F (102.5° C ± 9.5° C) minimum, after being heated for four hours ± 5 minutes, as determined by ASTM designation D-36.

# **SPECIFICATIONS**

## **THERMOPLASTIC PAVEMENT MARKING MATERIALS**

3. Specific Gravity. The specific gravity of the thermoplastic compound shall not be less than 1.95 nor greater than 2.15 at 77° F (23.2° C).

4. Impact Resistance. The impact resistance shall be a minimum of 10 inch pounds (1.13J) at 77° F (23.2° C) after the material has been heated for four hours  $\pm$  5 minutes at 425°  $\pm$  3° F and formed into test specimens as described in ASTM designation D-256.

5. Bond Strength. After heating the thermoplastic material for four hours  $\pm$  5 minutes at 425  $\pm$  3° F, the bond strength to Portland cement concrete shall exceed 180 psi (1.24 MPa) minimum.

6. Cracking Resistance. The traffic line of thermoplastic material shall show no cracks after being applied properly after heating for four hours  $\pm$  5 minutes at 425  $\pm$  3° F, and cooling 15°  $\pm$  3° F.

# SPECIFICATIONS

## THERMOPLASTIC PAVEMENT MARKING MATERIALS

7. Yellowness Index. The white thermoplastic material shall not exceed a yellowness index of 0.15.

### H. Reflectorization

During manufacture, reflectorizing glass spheres shall be mixed into the material at a rate of 30% by weight of the material. Glass spheres shall also be automatically applied to the surface of the material at a uniform rate of approximately 10 pounds for every 100 square feet of line. These spheres shall be either dropped or sprayed onto the thermoplastic material while it is in a molten state, as specified elsewhere in this contract.

### J. Glass Spheres (Pre-mixed)

The glass beads (pre-mixed) used in formulation shall be smooth, clear, free from any air inclusions and scratches that might affect their function as a retroreflective media, and shall have the following characteristics:

1. Refractive Index. The refractive index of the glass beads shall be a minimum of one point five (1.5), as determined by the Becke Line Method at 25° C (77° F).

2. Roundness. The glass beads shall have a minimum percentage of 80% true spheres. This roundness percentage shall be determined by the weight method described in Procedure B of the ASTM method of test for Roundness of Glass Spheres (D-1155), as modified for the 30, 50, and 80 mesh sieves.

3. Chemical Resistance. The glass beads used in formulation shall be 100% passing on the test for chemical resistance. This test is to be done by immersing the glass beads for one hour in water and corrosive agents, followed by microscopic inspection. Three, 3 to 5 gram portions of the sample shall be placed in separate pyrex glass beakers or porcelain dishes; one sample shall be covered with distilled water, one sample with 3N solution of sulfuric acid, and one sample with 50% solution of sodium sulfide. After one hour of immersion, the glass beads of each dish or beaker shall be examined microscopically for evidence of darkening and/or frosting. All 3 samples shall show no evidence of frosting and/or frosting.

4. Gradation. The glass beads used in formulation shall have the following gradation, as determined by weights:

<u>U. S. Standard Sieve Size</u>	<u>Minimum</u>	<u>Maximum</u>
Passing #20	100%	-----
Passing #20, retained on #30	5%	10%
Passing #30, retained on #50	40%	80%
Passing #50, retained on #80	15%	40%
Passing #80	0%	5%



# **SPECIFICATIONS**

## **THERMOPLASTIC PAVEMENT MARKING MATERIALS**

5. Other Ingredients. The other ingredients shall meet the following specifications:

Titanium Dioxide

ASTM D 476 – Type 2

### **K. Application**

The material shall be applied to the pavement by both spray and extruded method. The thermoplastic material shall readily apply at temperatures of 400° F to 440° F from approved equipment to produce a line that is both continuous and uniform in shape at thicknesses between 60 and 120 mils. The material, when formed into traffic stripes, shall be readily renewable by placing a thin overlay of new material directly over an old line of the same material. Such new material shall bond itself to the old line in such a manner that no splitting or separation takes place. After heating the material for four hours at 425° F and testing for flowability, the white thermoplastic shall have a maximum residue of 18%, and the yellow thermoplastic shall have a maximum residue of 21%. The material shall not exude fumes which are toxic, obnoxious or injurious to persons or property when it is heated during application.

### **L. Shelf Life**

The material shall meet the requirements of this specification for a period of one year from the date of shipping. The thermoplastic pavement marking material must also melt uniformly with no evidence of skins or of unmelted particles for the same one year period. Any material not meeting the above requirements shall be replaced by the manufacturer at no cost to the City of Durham.

### **M. Packaging**

All thermoplastic material shall be delivered to the City of Durham in containers filled by the manufacturer. Each material container shall be clearly and adequately marked to indicate the material, date of manufacture, batch or lot number and the manufacturer's name and location. Each container shall be of sufficient strength to permit normal handling during shipping and transporting on the job without loss of material, and prevent any contamination by water to the thermoplastic material.

The thermoplastic material shall be in granular form, packaged in suitable bio-degradable bags to which it will not adhere during shipment or storage. The bio-degradable bags shall be made from materials that can be melted into the thermoplastic kettles, without affecting the thermoplastic itself. The bags, when filled, shall weigh a minimum of 48 lbs. (21.8 kg) and a maximum of 52 lbs (23.6 kg). The label shall warn the user that the material shall be heated in the range of 400-440°F (204-227°C) during application.

# CERTIFICATE OF COMPLIANCE THERMOPLASTIC

To: City of Durham  
Department of Public Works  
101 City Hall Plaza  
Durham, North Carolina 27701

Having authority to act for \_\_\_\_\_, of \_\_\_\_\_  
Company Name Company Address

\_\_\_\_\_, I do hereby certify that the material sample of  
\_\_\_\_\_ and designated as:  
Product

Mfg.	Code/Batch No.	Color	Type
_____			
_____			

Has been tested and has been found to comply with the requirements as to physical and chemical characteristics of the specification under which the samples were being tested.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

# SPECIFICATIONS

To: The City of Durham  
Department of Public Works  
101 City Hall Plaza  
Durham, North Carolina 27701

Date: \_\_\_\_\_

The following are the characteristics of the designated sample of material of \_\_\_\_\_

as submitted by: \_\_\_\_\_

Company Name

of \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Company Address

Type and Color of Material \_\_\_\_\_

Manufacturer's Code/Batch No. \_\_\_\_\_

## THERMOPLASTIC:

1. Specific Gravity \_\_\_\_\_
2. Softening Point \_\_\_\_\_
3. Bond Strength \_\_\_\_\_
4. Percent Pigment \_\_\_\_\_
5. Pigment Volume Concentration \_\_\_\_\_
6. Type & Amount of Yellow Pigment Used \_\_\_\_\_
7. Type & Amount of White Pigment Used \_\_\_\_\_
8. Percent of Pre-Mix Beads \_\_\_\_\_
9. Recommended Application Rates:  
Thermoplastic \_\_\_\_\_ lbs/mile  
Drop-on Beads \_\_\_\_\_ lbs/100 sq. ft.

# SPECIAL CONDITIONS

1. Whenever possible, the City will make adjustments to accommodate and/or improve unique or foreseen situations of the contractor. Example: If applicable, the City will agree to use a different product than requested, or if practical, will use a different plant/location (if available) to obtain the desired product(s) needed.
2. **This order will be placed for a one time delivery for both sections.**
3. All products furnished throughout the period of this contract shall meet any requirements established or set forth by the North Carolina Department of Transportation, EPA, OSHA or any other body that legally or otherwise have authority to establish requirements for such products.
4. The contractor to whom the award is made must carry insurance in the following minimum amounts:

Worker's compensation – Statutory Benefits

Comprehensive General Liability

- Premises – Operations; Products/Completed Operations Hazard
- \$100,000/each occurrence - \$300,000 aggregate bodily injury
- \$50,000/each occurrence – Property damage
- ***The City of Durham must be named additional insured for this contract.***

Automobile Liability – Comprehensive Form, Owned, Hired, Non-owned

- \$100,000 Bodily injury – each person
- \$300,000 Bodily injury – each accident
- \$50,000 Property Damage
- \$300,000 Bodily injury and property damage combined

Insurance shall be provided by companies authorized to do business in the State of North Carolina.

Insurance shall be evidenced by a certificate providing notice to the City of not less than 30 days prior to changes in coverage. Both the insurance certificate and the additional insured endorsement must be originals.

# GENERAL CONDITIONS

1. Bids under \$90,000 are considered informal; therefore, they will not be opened at any specific time. Bids will be opened and tabulated the first working day following the due date shown on the "Request for Quotation".
2. The bid must be signed by an authorized official of the firm.
3. The City reserves the right to reject any or all bids. It further reserves the right to waive formalities and technicalities in as far as it is authorized to do so, where it deems it advisable in the best interest of the City.
4. All information requested, including manufacturer, model/part numbers, unit prices and extensions must be entered on the appropriate spaces provided; otherwise, bid is subject to rejection.
5. All bids must be submitted on this form; otherwise, they are subject to being rejected.
6. Do not include Federal or State taxes in the bid prices. The City is exempt from Federal Tax and will furnish exemption certificates. The City pays State tax; if you are awarded the bid, add State and Local (when applicable) sales tax to your invoice.
7. The award of the bid shall be made to the lowest responsible bidder taking into consideration, quality, performance, and time of delivery.
8. Any changes made after the bid has been awarded regarding specifications, quantities ordered, etc., must be with the written consent of the Purchasing Manager; otherwise, the responsibility for such changes will be with the supplier.
9. Alternate bids may be submitted; if deemed advantageous to the City, they will be evaluated and considered. The City is under no obligation to consider or accept an alternate bid and reserves the right to reject any or all such bids. Alternate bids may be made beyond responding to the terms and conditions of the solicitation or as the only response to the solicitation.
10. All exceptions to the specifications and/or special conditions must be noted in writing. Bids that fail to meet this condition are subject to rejection.
11. Brand names are used in specifications solely for denoting the type and quality of articles or articles wanted. When bidding items based on being "equal" to what are requested, literature and specifications describing the items must accompany the bid to ensure proper consideration.

# GENERAL CONDITIONS

12. All bids shall be firm for 45 days from the bid opening date.
13. Bids can be hand delivered or mailed to our office at 101 City Hall Plaza (Annex), Durham, North Carolina 27702-0490. **Bids may be faxed in to (919) 560-4325.** All bids received must be clearly labeled as a bid showing the bid number and the date and time of the bid opening. Late bids will not be considered.
14. In signing the bid, Bidder agrees to comply with the provisions of the attached "Equal Employment Opportunity" provisions.
15. The City of Durham encourages participation from minority (MBE), women (WBE), and disadvantaged (DBE) business suppliers.
16. In case of default by the bidder, the City reserves the right to obtain articles or services from other sources and to hold the bidder responsible for the difference in cost.
17. All organizations doing business with the City of Durham are required to comply with all state, local and federal licensing requirements. This includes obtaining a City of Durham business privilege license (if applicable). All contractors receiving awards must conform to the City of Durham procedures that include obtaining a City of Durham Privilege License. To obtain a Privilege License, call (919) 560-4700.
18. Assistance in completing the bid forms is available by contacting the City's Purchasing Division, telephone (919) 560-4132.

Lynette McRae  
Purchasing Supervisor

Chris Bernat  
Purchasing Agent

Raushan Gross  
Purchasing Agent

# WORKFORCE STATISTICS

All vendors must complete and submit the following workforce information in order for bid to be considered.

## WORKFORCE STATISTICS CORPORATION STATISTICS

Total Workforce		# Black Males	(%)
Total # Females	(%)	# White Males	(%)
Total # Males	(%)	# Other Males	(%)
		# Black Females	(%)
		# White Females	(%)
		# Other Females	(%)

## LOCATION OF COMPANY PERFORMING CONTRACT

City: \_\_\_\_\_ State: \_\_\_\_\_

Total Workforce		# Black Males	(%)
Total # Females	(%)	# White Males	(%)
Total # Males	(%)	# Other Males	(%)
		# Black Females	(%)
		# White Females	(%)
		# Other Females	(%)

I certify that the information provided is true and correct at the time and date of filing this bid.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Name of Firm